UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/730,685	12/08/2003	Richard M. Lange	3224R	5720

26645 7590 11/17/2006

THE LUBRIZOL CORPORATION
ATTN: DOCKET CLERK, PATENT DEPT.
29400 LAKELAND BLVD.
WICKLIFFE, OH 44092

EXAMINER	
SINGH, PREM C	

ART UNIT	PAPER NUMBER
1764	

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/730,685	LANGE ET AL.	
	Examiner	Art Unit	
	Prem C. Singh	1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6 and 9-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6 and 9-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *09/13/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Amendment to claims 1, 6, 9-12, 14, and 22; cancellation of claims 4, 5, 7, and 8; and addition of new claims 25 and 26, is noted.

2. In view of the claim amendments, new rejection follows.

Claim Objections

3. Claim 10 is objected to because of the following informalities:

4. Claim 10 (lines 4 and 5) read "propylene trimers", "propylene tetramers", "isobutylene dimmers, trimers, and tetramers".

Appropriate correction is required.

The examiner understands that they all should be monomers.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1, 2, 4, 5-12,15, 16, 18-20, and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US Patent 4,922,047) in view of Johnson et al (US Patent 6,346,585).

9. With respect to claims 1 and 6, Chen invention discloses, "Traction fluid was prepared by co-polymerizing beta-pinene and isobutylene using HZSM-5B zeolite catalyst." (Column 9, lines 42-49). "It is understood however, that in the preferred

embodiment of the invention the lube oil product is hydrogenated." (Column 7, lines 60-63).

Chen invention also discloses, "The traction fluid is made by the catalytic polymerization of styrene, alpha-methyl styrene, beta-methyl styrene, or by catalytic polymerization of propylene or butylenes. The polymeric materials obtained can be used alone or mixed together as traction fluids." (Column 2, lines 9-14).

Chen invention does not specifically mention about co-polymerizing styrene and butylenes.

Johnson invention discloses a process to produce lube oil additives.

Johnson discloses, "The polymers produced by the process of this invention are derived from C_2-C_{30} olefin monomers and mixtures thereof and derivatives thereof. Under this terminology, styrene and derivatives would be a C_2 olefin substituted by a phenyl group." (Column 6, lines 16-20). "Specific examples of terminal and internal olefin monomers which can be used to prepare the polyalkenes of this invention include styrene-isobutylene copolymer." (Column 7, lines 17-38).

It is to be noted that styrene is a vinyl arene monomer. Although Chen does not specifically mention about a branched non-cyclic olefin, butylenes can be straight or branched. Since Chen invention shows that pinene and isobutylene can be copolymerized together, while Johnson shows that styrene and isobutylene can be co-polymerized together, it would have been obvious to one skilled in the art at the time the invention was made to modify Chen invention, substitute styrene for pinene, and co-polymerize styrene with isobutylene together as disclosed by Johnson to produce a

traction fluid of desired qualities. See *In Re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980)*.

10. With respect to claim 2, although Chen invention does not specifically mention about 10 total units of monomers (a) and (b), even dimmers of styrene and butylenes will have a total of at least 4 units of monomers.

11. With respect to claims 9 and 10, Chen invention discloses, "The traction fluid is made by the catalytic polymerization of propylene or butylenes." (Column 2, lines 9-12). Although Chen does not specifically mention, but it is known to those skilled in the art that butylenes can be branched and non-cyclic.

12. With respect to claims 11 and 12, Chen invention does not disclose using isoprene or non-cyclic terpene as component (b).

Chen invention uses cyclic terpenes as component (a) and propylene and/or butylenes as component (b). Since isoprene is also an alkene, its properties are similar to propylene and butylenes and therefore, it is expected that the use of isoprene as component (b) will be equally successful. Although Chen does not mention non-cyclic terpene, one skilled in the art will use a non-cyclic terpene expecting a reasonable degree of success based on the use of cyclic terpenes as component (a).

13. With respect to claims 15, 23, and 25, Chen invention discloses, "Various catalyst systems are disclosed. For example, for styrene polymerization conventional sulfuric acid can be used, and for butylenes polymerization acid catalysts such as $AlCl_3$ or BF_3 can be used." (Column 2, lines 14-17).

Although Chen does not specifically mention about using Lewis acid or cross-linked polystyrene resin as catalysts, but it would have been obvious to one skilled in the art at the time the invention was made to modify Chen invention and use Lewis acid and cross-linked polystyrene resin as catalysts because they are expected to be equally effective for polymerization reactions.

14. With respect to claims 16 and 24, Chen invention does not disclose using a solvent in the addition reaction. Also, Chen invention does not disclose using a heteropolyacid as an acid catalyst.

Johnson invention discloses, "A method for producing polymers by polymerization of at least one olefin using a catalyst comprising a partially or fully neutralized ammonium salt of heteropolyacid." (Column 3, lines 45-50). "The heteropoly catalysts are active as their acid form, in the fully salt form, or in the partially exchanged salt form." (Column 4, lines 26-30). "The polymerization can be conducted neat but is preferably conducted in the presence of a substantially inert hydrocarbon solvent." (Column 5, lines 57-62).

Since Chen and Johnson both inventions are polymerizing olefins, it would have been obvious to one skilled in the art at the time the invention was made to combine the

teachings of Chen and Johnson and use a heteropolyacid as catalyst due to its ease for use in any form. It would also have been obvious to use an inert solvent to facilitate the polymerization reaction.

15. With respect to claims 18-20, Chen invention does not disclose using oil of lubricating viscosity other than the addition product and use of additional traction fluid.

Since Chen invention discloses that the lube oil traction fluids of both of the embodiments (one using only terpenes and the other using terpenes and olefins) can have a kinetic viscosity at 100°C of 3 to 10 cS, it would have been obvious to one skilled in the art to use a composition comprising lube oils obtained in two different embodiments or two different processes with different viscosities. This will allow producing lube oils with variable physico-chemical properties for different uses.

16. With respect to claim 22, it is to be noted that it is a process of producing a composition as disclosed under claim 1, and dislosed by combined teachings of Chen and Johnson.

17. Claims 3, 13, 14, 17, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US Patent 4,922,047) in view of Johnson et al (US Patent 6,346,585) and further in view of Tipton (US patent 6,372,696).

18. With respect to claim 3, Chen and Johnson inventions do not disclose Brookfield viscosity at –30°C.

Tipton discloses Brookfield viscosity at –30°C to be 20 Pa-s (Column 20, lines 50-57). Although Tipton's results are based on an oil with additives, it would have been obvious to one skilled in the art at the time the invention was made to combine Chen, Johnson and Tipton inventions and specify Brookfield viscosity of the hydrogenated product at –30°C without the additives.

19. With respect to claims 13 and 14, Chen and Johnson inventions do not disclose 10-90 wt % of monomers as components (a) and (b).

Tipton discloses 41.4% hydrogenated linear dimmer of alpha-methyl styrene, and 41.4% of low molecular weight hydrogenated polybutene (Column 20, lines 50-53). Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Chen and Johnson invention and specify the monomer contents in the composition, as disclosed by Tipton, for their characterization.

20. With respect to claims 17 and 21, Chen and Johnson inventions do not disclose use of additives. Also, Chen and Johnson inventions do not disclose a method for lubricating a power transmission apparatus.

Tipton invention discloses, "A traction fluid comprising an additive selected from the group consisting of dispersants, detergents and mixtures thereof. The present invention also provides a method of lubricating a power transmission apparatus such as

a traction drive, comprising employing therein the above-described traction fluid." (Column 2, lines 25-44). "In one embodiment a dispersant viscosity modifier is prepared." (Column 13, lines 57-58). "Another optional, but preferred species is one or more friction modifiers." (Column 15, lines 42-44).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to combine the teachings of Chen and Tipton and blend different additives disclosed in Tipton invention into the traction fluid disclosed in Chen invention for improved and better performance of the traction fluid.

21. With respect to claim 26, Chen does not disclose a naphthalene nucleus.

Johnson uses divinylbenzene (Column 7, line 27) as a component for polymerization.

Although Johnson does not specifically mention about naphthalene nucleus, it would have been obvious to one skilled in the art at the time the invention was made to modify Chen and Johnson inventions and substitute divinylbenzene by using divinyl naphthalene. Both compositions are functionally similar and expected to perform in a similar way on polymerization. Divinyl naphthalene has naphthalene nucleus.

Response to Arguments

22. The Applicant argues that Styrene or substituted styrenes, however, are never disclosed or suggested as a part of Chen's invention. And looking more closely at the

description of Duling in col. 2, Chen describes the traction fluid as "made by the catalytic polymerization of styrene, alpha-methyl styrene, beta-methyl styrene, or by the catalytic polymerization of propylene or butylene" [emphasis added]. Duling never teaches or suggests a copolymerization product of a vinyl aromatic together with propylene or butylene. This may be confirmed by reviewing the Duling patent itself, which is now made of record in the accompanying supplemental information disclosure statement.

The Applicant's argument is not persuasive because the new rejection addresses the issues raised by the Applicant.

23. The Applicant argues that there would be no motivation to arrive at the present invention starting from the disclosure of Chen.

The Applicant's argument is not persuasive because the new rejection combines Chen and Johnson to arrive at the claimed invention.

24. The Applicant argues that the typical adducts of the present invention are low molecular weight mixed dimmers and trimers (see examples). One would not look to the Johnson patent to obtain the materials of the present invention.

The Applicant's argument is not persuasive because the molecular weight of the adducts have not been claimed. The limitations from the specifications can not be imported to the claims.

25. The Applicant argues on new claims 25 and 26.

The new rejection addresses the limitations of claims 25 and 26.

Conclusion

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

27. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 6:30 AM-3:00 PM.

29. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

30. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PS /102506

Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700